

Green Guide for Local Governments

Strategy: Transportation

Use and Encourage Non-Motorized Transport (NMT)

Fast Facts-

- Motorized transport is expensive and inefficient over short distances and is a major contributor to carbon emissions? (Balsas, 2002).
- NMT is the most flexible and affordable form of transportation (Woodinville, 2005).
- NMT preserves open green spaces, wildlife habitats, and cultural resources such as historic buildings (Woodinville, 2005).
- NMT reduces costs associated with car purchases, driving delays and parking (SACOG, 2005).
- Creating accessible, well-connected non-motorized facilities where public activities are encouraged improves safety, neighborhood interaction, and community cohesion (SACOG, 2005).
- NMT may attract businesses and new skills to an area, including tourism, due to improved environmental quality (Woodinville, 2005).
- Greenways provides access to green spaces and opportunities to expand recreational opportunities for walking, jogging, biking, and skating (NYCGOVPARKS, 2008).
- In medium-sized cities in Japan, Germany and the Netherlands, 40-60 percent of all trips are made by walking and cycling (Guitink et al. 1994).
- Roadway intersections pose the greatest danger to cyclists (SACOG, 2005).
- Traffic control measures should be implemented to warn both drivers and bicyclists of the oncoming intersection for safe crossing of the intersection (SACOG, 2005).
- Public schools in Marin County, CA, that participated in the Safe Routes to Schools program saw increases in walking, carpooling and biking to school of from 64% to 114%, respectively (Staunton et al. 2003).

Actions for Local Governments:
Determine the potential of NMT in your jurisdiction through social surveys, transportation analyses, and cost assessments.
Participate in the Safe Routes to School Program.
Provide programs for citizens to buy, rent, swap or share bicycles.
Develop bicycle and walking routes to common regional destinations, public parks and natural areas.
Conduct public awareness campaigns to popularize NMT
Provide safe and convenient parking for bicycles.
Encourage use of bicycles through public awareness and safety campaigns.
Address barriers to using bicycles by:
Providing the same legal protection as for other road users.
Provide safe and convenient parking for bicycles.
Providing regular patrols along bike and walking routes.
Installing bicycle and pedestrian safety signs and crosswalks.
Minimizing parallel parking on popular streets that inhibit bicycling.
Provide information for bike users, including:
Road safety information, such as use of road signs and hand signals.
Safety tips for bike users such as on use of helmets.
Address safety issues for bicycle riders and walkers by:
Wearing or requiring the wearing of helmets.
Installing or enforcing minimal safety accessories on bikes such as horns and lights.
Obeying or enforcing obedience to all road rules.

Resources:

Walking to school-

Walking school bus - <http://www.walkingschoolbus.org/>
Safe Routes to Schools - <http://www.saferoutesinfo.org/>
Ohio Safe Routes to School program - <http://www.saferoutesinfo.org/>
Non-Motorized Transport- Sacramento Area Council of Governments
<http://www.sacog.org/mtp/2035/mediacenter/> (Non-motorized Transport)

Greenways-

Greenways, Inc. - <http://www.greenways.com/>
Knoxville, Tennessee. <http://www.ci.knoxville.tn.us/greenways/>
Greenways Initiative, southeastern Michigan - <http://greenways.cfsem.org/>
Bicycling and Greenways, New York City - <http://www.nycgovparks.org/facilities/bikeways>

General information on non-motorized transport-

City of Woodville, WA, Non-Motorized Transit Plan -
<http://www.ci.woodinville.wa.us/Live/NonMotorizedTransportation.asp> (
The World Bank - <http://www.worldbank.org/html/fpd/transport/publicat/td-ut4.htm>
Rideshare Program that Works - <http://www.worldchanging.com/archives/009168.html>

Bicycle safety-

National Highway Traffic Safety Administration -
<http://www.nhtsa.dot.gov/portal/site/nhtsa/menuitem.810acaee50c651189ca8e410dba046a0/>
How not to get hit by cars - <http://bicyclesafe.com/>
Ohio Bicycle Federation - <http://www.ohiobike.org/resources.htm>
Bike Miami Valley - <http://www.bikemiamivalley.org/safety.htm>
Cincinnati Children's Hospital - <http://www.cincinnatichildrens.org/svc/alpha/r/bike-helmet/community/ed.htm>

Regional planning for NMT - OKI

Tri-State Bicycle Facilities - http://www.oki.org/transportation/bike/tristate_bike.html
Regional Pedestrian Plan - <http://www.oki.org/transportation/pedestrianplan.html>

References cited:

- Guitink, Paul, Susanne Holste, and Jerry Lebo. 1994. Non-motorized transport: confronting poverty through affordable mobility. Infrastructure Notes, April 1994. Transport No. UT-4. The World Bank, Transportation, Water and Urban Development Dept., Washington, DC, USA.
<http://www.worldbank.org/html/fpd/transport/publicat/td-ut4.htm> (accessed November 28, 2008).
- Staunton, Catherine, Deb Hubsmith and Wendi Kallins. 2003. Promoting safe walking and biking to school: the Marin County success story. American Journal of Public Health 93 (9): 1431.
<http://www.ajph.org/cgi/reprint/93/9/1431?ijkey=356f194f4c9d55a103829bd50f0fb09b84edd133> (accessed December 6, 2008).
- SACOG (The Sacramento Area Council of Governments). October 14, 2005. Final Bicycle & Pedestrian Policy Committee Report on Class I Trail User Policy.
<http://www.sacog.org/mtp/2035/mediacenter/> (accessed December 7, 2008)
- Whitelegg, J. and Williams, N. 2000. Non-motorized transport and sustainable development: evidence from Calcutta. Local Environment, 13549839, Vol. 5, Issue 1.
- Woodinville, City of. 2005. Non-Motorized Transport Plan. Washington
<http://www.ci.woodinville.wa.us/Live/NonMotorizedTransportation.asp> (Non-Motorized Transit Plan) (accessed November 28, 2008)

Transportation (automobiles)

Fast Facts-

- Transportation consumes 70% of the nation's oil and generates 1/3 of the nation's carbon emissions (Lovins 2005).
- In 2004, U.S. cars and light trucks emitted 314 million metric tons of carbon dioxide (DiCicco and Fung, 2006).
- The United States has 5% of the world's population and 30% of the world's automobiles, but it contributes 45% of the world's automotive CO₂ emissions (DiCicco and Fung, 2006).
- Total vehicle miles traveled by U.S. cars and light trucks in 2004 amounted to 2.6 trillion miles (DiCicco and Fung, 2006 automobile).
- The fuel economy of the U.S. stock averaged 19.6 mpg in 2004, implying an average fuel use rate of 51 gallons per 1,000 miles of driving (DiCicco and Fung, 2006).
- Each gallon of gasoline saved keeps 5.3 pounds of carbon from being emitted into the atmosphere (DiCicco and Fung, 2006).
- Using biodiesel blends can reduce carbon emissions from 7% to 44 % and particulate matter from 19% to 68% (Schumacher, 1995).
- Emissions of CO₂ for one person traveling 40 miles by car to work, round trip travel per is 0.9207 tons per month (Sustainable Travel International, 2008).
- The average 2005 passenger car cost 31 cents per miles in fuel, maintenance, and depreciation to drive (Environmental Defense Fund, 2008).

Actions for Local governments:
Institute fuel taxes to reduce fuel use.
Promote commuting by allowing only odd-numbered license plates to drive on one day and even-numbered license plates on the next day.
Develop a CarShare system – cars available at hubs for minimal fee for use short-term use.
Program stoplights to optimize traffic flow and reduce stopping of automobiles, which increases carbon emissions.
Develop road systems and by-passes that reduce stopping of automobiles and shorten travel distance.
Consider 4-day work week to reduce worker transportation
Shut automobiles off when stopped to reduce idling time.
Reduce use of air conditioning and other features that increase fuel use.
Keep tires inflated to proper pressure to reduce fuel consumption.
Reduce the weight of things transported in vehicle; don't carry unnecessary items.
When replacing an automobile, replace with a hybrid, fuel-efficient, alternative fuel, or smaller vehicle.
Purchase E-85 fuel instead of regular gasoline and biodiesel fuel blends instead of petrodiesel.

Resources:

Cool Counties Implementation Guide-

http://coolcities.us/resources/bestPracticeGuides/CoolCounties_ImplementationGuide.pdf

Biodiesel emissions data-http://web.missouri.edu/~schumacherl/Biodiesel_Emissions_Data_60_DDC.pdf

Biofuels reported to cut emissions by 94% in UK-<http://www.biofuelreview.com/content/view/992/>

Benefits of Carpooling

<http://www.erideshare.com/?gclid=CMYD2cnRs5cCFQNHfQodyQtajA> CarSharing.net-

CarShare programs-

<http://www.carsharing.net/aboutus.html>

Carpooling in Cincinnati - <http://www.erideshare.com/carpool.php?city=Cincinnati>

Rideshare – regional - <http://www.oki.org/commuter/ridesare.html>

http://www.enquirer.com/editions/1999/07/01/loc_sharing_van_ride_now.html

Electric vehicles- EV World- <http://www.evworld.com/>

Green Car Congress- <http://www.greencarcongress.com/about3.html>

Mass Transit

Fast Facts-

- Public transportation reduces pollution and helps promote cleaner air.
- Energy-related CO₂ emissions represent 82% of total US human-made greenhouse emissions. Public transportation produces about half as much CO₂ per passenger mile as private vehicles. (Public Transportation: Wherever Life Takes You, 2008).
- Transit services benefits include:
 - Reducing road congestion,
 - Preserving communities because encourages members to stay near to transit instead of moving out and away from the community,
 - Improving the environment through less vehicles on the road and because it has the possibility to run on electricity which can come from alternative fuel sources,
 - Enhancing economy by creating jobs (GoRailGo, 2008).

Actions for Local Governments:
Expand geographic range and frequency of mass transportation; consider county-wide, city-wide, and county-to-city transit routes.
Create connection system between major cities in Ohio, Indiana, and Kentucky.
Promote use low- or zero-emission mass transit vehicles (natural gas, bio diesel, hybrid, electric, hydrogen).
Promote the use of alternative fuels in current mass transit vehicles.
Create attractive hubs and stations; possible amenities include indoor seating, bike racks, coffee shops, newsstands, and free wi-fi internet.
Encourage low-emission transport to and from transit hubs:
Increase parking availability at hubs.
Promote bicycle usage by providing lockers at hubs and ability to carry bikes on buses.
Promote bicycle rent/lease/share programs at hubs.
Promote benefits of mass transit with education and incentives, such as discounted fares for events and/or groups.

General Sites

History and future plans of Cincinnati's transportation - <http://www.cincinnati-transit.net/>
Transportation-related issues in the Tristate - <http://oki.org>
Ohio public transportation systems - http://www.apta.com/links/state_local/oh.cfm

APTA – Does transit work? <http://www.apta.com/research/info/online/weyrich2new.cfm>
Smart Growth / Smart Energy Toolkit (Case studies – Transit Oriented Development [TOD])
http://www.mass.gov/envir/smart_growth_toolkit/index.html
Business benefits of mass transit for employees - <http://www.transitcenter.com/>.

Examples of successful public transit systems:

King County, Washington - <http://transit.motrokc.gov/>
Boston, Massachusetts - <http://www.mbta.com>

Cincinnati area mass transit-

GoMetro maps, timetables and info - <http://www.go-metro.com/>
Transit authority of northern Kentucky (TANK) maps, timetables and info <http://www.tankbus.org/>

Cincinnati Rideshare

<http://www.erideshare.com/carpool.php?city=Cincinnati>
<http://www.rideshareohio.com/>

Airports and Air Travel

Fast Facts

- Travel by air emits about ten times more carbon than travel by train.
(The Independent, 2008)
- Traveling by air produces three times the carbon emissions as travelling by bus.
- Flying to Europe business class produces 1.5 times more CO₂ per person than flying by coach.
(Stockholm Environment Institute, 2008)
- Emissions of CO₂ on a one-way flight (for 1 passenger) from Cincinnati to the following cities are:
 - To New York (JFK) (924 Km) 136.12 Kg of CO₂
 - To Chicago, IL (ORD) (824 Km) 81.44 Kg of CO₂
 - To Miami, FL (MIA) (1,534 Km) 200.42 Kg of CO₂
 - To Nassau, Bahamas (1,698 Km) 210.81 Kg of CO₂(International Civil Aviation Organization, 2008)
- US airlines reduced 2.5 billion metric tons of CO₂ from 1978 to 2007; that's the equivalent of taking 18.7 million cars off the road over 29 years.
(Environmental Leader, 2008)
- Air freight uses more fuel to transport the same amount of cargo as a ship or train.
- 200 liters (52.8 gallons) of fuel can transport a standard shipping container 3,300 miles by ship, 850 miles by train, 300 miles by truck, and only 32 miles by air freight.
(Berkin, Samuel. 2003)

Actions for Local Governments:
Use video conferences, email and phones.
Take the train or bus.
Use the most direct route as possible.
Fly economy instead of business class.
Buy carbon offset.
Encourage staff to use reusable coffee mugs in airport lounges.
Require more energy efficient planes

Resources:

Calculate air travel CO₂ emissions-

http://www2.icao.int/public/cfmapps/carbonoffset/carbon_calculator.cfm

Green Airports- <http://www.cleanairports.com/>

Buy carbon offset-

http://www.conservation.org/act/live_green/carboncalc/Pages/default.aspx?gclid=CN-r-v3fqZcCFQsQagodf3Pqhg

http://www.carbonfund.org/?gclid=CM39_cvhqZcCFRIRagod4SAmjA

Light Rail Service-

http://www.bwairport.com/ground_transportation/light_rail/

http://www.msppairport.com/msp/Ground_Transportation/Light_Rail.aspx

http://www.lightrailnow.org/features/f_cin001.htm

Bus service- <http://www.iexplore.com/airportguides/Ohio/CVG/Overview>

Optimize Fleet Practices

Fast Facts

- Ground transportation, which includes rails and trucks, contributes 30 million metric tons of carbon dioxide annually (US EPA, August 2008).
- According to US government and industry statistics, 85 percent of the total value of United States cargo is trucked, accounting for 66 percent of all freight by weight. Railroads represent four percent of the total value of all freight by weight, carrying another 16 percent of the nation's freight by weight (Embassy of United States, Canada, September 2005).
- Energy consumption by the freight network including both rails and trucks accounts for 20% of overall US energy consumption (US EPA, August 2008).
- By 2012, US ground freight transport will consume over 45 billion gallons of diesel fuel and produce annually over 450 million metric tons of carbon (US EPA, August 2008).
- Idling 5-10 minutes per day for a year uses over 26 gallons of fuel (Newmarket).

Actions for Local Governments:
When replacing fleet vehicles, replace with hybrid, fuel-efficient, alternative fuel, or at least smaller vehicles.
Encourage use of bicycles and other non-motorized transportation by employees.
Increase awareness of using environmentally sound parts and maintenance schedules to maximize fuel efficiency.
Avoid idling of fleet vehicles.
Optimize transportation routes.

Resources:

City/county climate action plans-

- Marin County, CA - http://www.co.marin.ca.us/depts/CD/Main/pdf/final_ghg_red_plan.pdf
Seattle, Washington - <http://www.seattle.gov/climate/takingAction.htm>
Burlington, Vermont
<http://yosemite.epa.gov/gw/StatePolicyActions.nsf/LookupLocalExhibits/Vermont+:+Burlington>

Transportation plans-

- King County, Washington - http://www.metrokc.gov/kcdot/KCDOT_AnnualReport2007.pdf
Franklin County, MA -
http://www.frcog.org/pubs/transportation/2007RTP/Ch12_EnergyEfficientTrans_Apr07.pdf

Vehicle maintenance-

- http://oee.nrcan.gc.ca/transportation/personal/vehicle_maintenance.cfm?attr=8
<http://www.allbusiness.com/transportation/road-transportation-trucking-trucking/6230354-1.html>
<http://www.fueleconomy.gov/feg/maintain.shtml>

Reducing idling time-

- Benefits - <http://www.indycicap.org/assets/uploads/factsheetidlereduction.pdf>
IdleFree BC - <http://www.idlefreebc.ca/onboard/index.php>
Bus savings calculator - http://www.epa.gov/cleanschoolbus/idle_fuel_calc.htm
Idling cost calculator - E3Fleet (Tools and resources) -
<http://www.e3fleet.com/mc/page.do?sitePageId=38616&orgId=clcc>
EPA SmartWay (Transport – Tools – Idling) <http://www.epa.gov/SmartwayLogistics/index.htm>
Idling myths- http://www.makealeap.org/idling_myth

Case studies of green fleets-

- USDE - http://www.afdc.energy.gov/afdc/fleets/taxis_experiences.html

New York City taxis- <http://www.nyc.gov/html/tlc/html/home/home.shtml>

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Newmarket, City of. _____. The facts about idling. City website; Environmental leadership, Break the habit. Available at HTTP://www.newmarket.ca/userfiles/HTML/nts_1_1_1.html (accessed December 9,2008).

US EPA. Smart way transport partnership. in US EPA [database online]. USA, 2008 [cited November 27 2008]. Available from <http://www.epa.gov/smartway/transport/basic-information/index.htm> (accessed November 27, 2008).

US EPA & NRCan Press. Event for official signing of the memorandum of understanding (MOU) and licensing agreement - fact sheet, September '05. Embassy of United States, Ottawa, Canada. in Embassy of United States, Ottawa, Canada [database online]. Ottawa, Canada, 2008 [cited December 4 2008]. Available from http://canada.usembassy.gov/content/textonly.asp?section=can_usa&subsection1=environment&document=environment_fs092205 (accessed December 4, 2008).

